ecology and environment, inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Project: El Dorado Hills Naturally Occurring Asbestos Multimedia Exposure Assessment

Project No.: 09.04.01.0011

TDD/PAN No.: 001275.0440.01.CP

Project Location: Various locations in El Dorado Hills, CA 95762

Proposed Date of Field Activities: September 24, 2004 through October 31, 2004

Project Director: Thomspson Chambers

Project Manager: Karen Ladd

Prepared by: Karen Ladd Date Prepared: 09/28/04

Approved by: CMcleod Date Approved: 9/29/04

1. INTRODUCTION

1.1 POLICY

It is E & E's policy to ensure the health and safety of its employees, the public, and the environment during the performance of work it conducts. This site-specific health and safety plan (SHASP) establishes the procedures and requirements to ensure the health and safety of E & E employees for the above-named project. E & E's overall safety and health program is described in *Corporate Health and Safety Program for Toxic and Hazardous Substances* (CHSP). After reading this plan, applicable E & E employees shall read and sign E & E's Site-Specific Health and Safety Plan Acceptance form.

This SHASP has been developed for the sole use of E & E employees and is not intended for use by firms not participating in E & E's training and health and safety programs. Subcontractors are responsible for developing and providing their own safety plans.

This SHASP has been prepared to meet the following applicable regulatory requirements and guidance:

Applicable Regulation/Guidance
29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER)
Other: none

1.2 SCOPE OF WORK

Description of Work: The START will conduct aggressive activity-based air sampling, ambient air sampling, and soil sampling at various locations within the El Dorado Hills community. Sample locations include multiple locations at the El Dorado Hills Community Park, Silva Valley Elementary School, Rolling Hills Middle School, Jackson Elementary School, a dirt parking area in front of Rolling Hills Middle School, and the New York Creek Nature Trail between the Community Park and Jackson Elementary School. Additionally, ambient air reference sampling will occur in the vicinity of these areas at locations that are either within these properties or on public land nearby. The START will monitor particulate and collect samples to test for asbestos. The START will also be responsible for video taping site activities, site documentation, and mapping work zones and site features with GPS.

The START will conduct activity-based air sampling following scripts during 20 different scenarios or events. To conduct the scenarios, START members will engage in activities that are designed to cause particulate material that may be present to become suspended in air. The scenarios are planned to take place at the following locations:

A. Children's playground at the Community Park
B. New York Creek baseball playing field at the Community Park
C. North Field baseball playing field at the Community Park
D. South Field baseball playing field at the Community Park
E. Lower soccer field at the Community Park
F. New York Creek Nature Trail
G. Baseball playing field at Silva Valley Elementary School
H. Basketball court area at Rolling Hills Middle School
I. Soccer field at Rolling Hills Middle School
J. Playing field at Jackson Elementary School
K. Garden and outdoor classroom at Jackson Elementary School
L. Bare areas, pathways, and asphalted play areas at Jackson Elementary School

In addition, ambient outdoor reference air sampling will be conducted at ten locations in the vicinity of these sites. Soil sampling will be conducted at the El Dorado Hills Community Park, Silva Valley Elementary School, Rolling Hills Middle School, Jackson Elementary School, a dirt parking area in front of Rolling Hills Middle School, and the New York Creek Nature Trail between the Community Park and Jackson Elementary School.

Equipment/Supplies: Attachment 1 contains a checklist of equipment and supplies that will be needed for this work.

The following is a description of each numbered task:

Task Number	Task Description
1	Activity-based air sampling at scenario locations. This includes conducting such activities as playing baseball, soccer, and basketball; jogging; riding a bike; performing field and play area maintenance activities; playing/moving about on playground play structures; digging in a sandbox; performing gardening activities; and other activities.
2	Reference air sampling.
3	Monitoring/overseeing scenario activities, documentation activities (including video monitoring and photographing), calibration of pumps and monitors, deployment of pumps and monitors prior to the start of scenario.
4	Soil sampling.

1.3 SITE DESCRIPTION

Site Map: An aerial photograph/map of the site showing scenario locations is attached to this document.

The El Dorado Hills Community Park at 1021 Harvard Way is situated on about 40 acres of property along El Dorado Hills Boulevard between Harvard Way and St. Andrews Drive (Latitude 38E 40' 59" North, Longitude 121E04' 28" West). The Community Park property, which is transected by New York Creek, contains three baseball diamonds, soccer playing fields, a children's playground, a swimming pool, community center structures (including the main office for the El Dorado Hills Community Services District), trails (including New York Creek Nature Trail), other picnic and recreational areas, and parking areas. The New York Creek Nature Trail is an unpaved trail adjacent to New York Creek. From Harvard Way, the trail runs north approximately 1.75 miles through the Community Park property and residential neighborhoods to Art Weisberg Park, which is opposite Jackson Elementary School on Francisco Drive.

Silva Valley Elementary School is located at 3001 Golden Eagle Lane (Latitude 38E 40' 40" North, Longitude 121E04' 11" West). With over 700 students, it is a year-round K-5 elementary school in the Buckeye Union School District. Some of the school's facilities include six classroom buildings, a multipurpose room, an administration building, a library, a computer laboratory, a grass-covered playing field, a grass-infield baseball diamond, and play structures.

Jackson Elementary School is located at 2561 Francisco Drive (Latitude 38E 42' 14" North, Longitude 121E04' 51" West). With approximately 575 students, it is a traditional K-5 elementary school in the Rescue Union School District. Some of the school's facilities include approximately 26 classrooms (all carpeted), an administration building, a library, a computer laboratory, a grass-covered playing field with grass-infield baseball diamonds, an outdoor classroom and garden, two paved play areas with basketball courts and tetherball, and play structures.

Rolling Hills Middle School is located at 7141 Silva Valley Parkway (Latitude 38E 40' 54" North, Longitude 121E04' 07" West). Built in its current location in 1998, the school is a year-round middle school (6^{th} to 8^{th} grades) with more than 700 students. The school is part of the

Buckeye Union School District. The Dirt Embankment is a dirt embankment/hillside behind Rolling Hills Middle School and inside its eastern boundary. Some of the school's facilities include classrooms, an administration building, a library, a grass-covered soccer field, and a paved basketball play area.

The Dirt Parking Area is an unpaved lot used for parking on public property in front of Rolling Hills Middle School, outside its western boundary. The property is apparently under the jurisdiction of the El Dorado County Department of Transportation and is said to be used regularly as a parking lot primarily by high school students who attend the nearby Oak Ridge High School.

Site History/Description (see project work plan for detailed description): Naturally occurring asbestos is found in ultramafic rock formations throughout El Dorado County, California, primarily in association with the Bear Mountain Fault Zone, which runs north to south across El Dorado County. In the vicinity of the El Dorado Hills Community Park, which is at the intersection of Harvard Way and El Dorado Hills Boulevard, the presence of asbestos in exposed soil and ambient air has already been documented through previous investigations as well as visual inspection conducted by the United States Environmental Protection Agency (USEPA), the California Department of Toxic Substances Control (DTSC), the California Air Resources Board (CARB), and the El Dorado Union High School District. These previous investigations were conducted at Oak Ridge High School, located at 1120 Harvard Way. Mitigation activities have been conducted by the El Dorado Union High School District with oversight by El Dorado County, the State, and USEPA to address asbestos contamination in classrooms and in exposed soils and dust on the campus of Oak Ridge High School.

In September 2003, a citizen petitioned US EPA to conduct a preliminary assessment at the El Dorado Hills Community Park, Silva Valley Elementary School, Rolling Hills Middle School, and other locations in the community where the suspected presence of naturally occurring asbestos in exposed and disturbed soil may be causing releases to air.

Is the site currently in operation? : Yes ~ No

Locations of Contaminants/Wastes: No systematic characterization of these locations identified in the petition has taken place to date, except for investigations conducted at Oak Ridge High School (diagonally across Harvard Way, southeast of the community center). Previous personal activity-based and exposure monitoring at the nearby Oak Ridge High School documented a maximum airborne concentration of 0.1023 f/cc. Sampling will be conducted during this assessment to evaluate if asbestos is present in air at or downwind of the areas of concern.

Types and Characteristics of Contaminants/Wastes:

~ Liquid	~ Solid	~ Sludge	~ Gas/Vapor
~ Flammable/Ignitable	~ Volatile	~ Corrosive	~ Acutely Toxic
~ Explosive	~ Reactive	: Carcinogenic	~ Radioactive
~ Medical/Pathogenic	Other: _____		

2. ORGANIZATION AND RESPONSIBILITIES

E & E team personnel shall have on-site responsibilities as described in E & E's standard operating procedure (SOP) for Site Inspection. The project team, including qualified alternates, is identified below.

Name	Site Role/Responsibility
Ecology & Environment Personnel	
Karen Ladd	Project Manager, Videographer, Photographer, Soil Sampler
Howard Edwards	QA Officer, Sample Control Manager, Calibrator, Soil Sampler
Mike Schwennesen	Logistics Team Leader, Soil Sampler
Maha Rahman	Reference Air Sampler, Scenario Player/Air Sampler
Ralph Lambert	Reference Air Sampler, Scenario Player/Air Sampler, Soil Sampler, Geologist
Steve Morin	Reference Air Sampler, Scenario Player/Air Sampler
Steve Hall	Deployer, Scenario Player/Air Sampler
Kerrie Stewart	Deployer, Scenario Player/Air Sampler, Soil Sampler
Tom Fortner	GPS Manager, Met Station Manager, Scenario Player/Air Sampler
Sara Dwight	Scenario Player/Air Sampler, Videographer, Photographer
Iain Baker	Scenario Team Leader, Scenario Player/Air Sampler
Cheryl Elliot	Site Safety Officer, Scenario Player/Air Sampler, Soil Sampler
Will Duncan	Logistics Support
Mike Folan	Logistics Support
Frank Castro-Wehr	Logistics Support
ERRG Personnel	
Ian Prowell	Scenario Player/Air Sampler
Casey Wheable	Scenario Player/Air Sampler
Ninyo & Moore Personnel	
Bill Larkin	Scenario Player/Air Sampler
Kris Larson	Scenario Player/Air Sampler

3. TRAINING

Prior to work, E & E team personnel shall have received training as indicated below. As applicable, personnel shall have read the field sampling plan, and quality assurance project plan prior to project work.

Training	Required
40-Hour OSHA HAZWOPER Initial Training and Annual Refresher (29 CFR 1910.120)	X
Annual First Aid/CPR	X
Hazard Communication (29 CFR 1910.1200)	X
40-Hour Radiation Protection Procedures and Investigative Methods	
8-Hour General Radiation Health and Safety	
Radiation Refresher	
DOT and Biannual Refresher	
Other:	

4. MEDICAL SURVEILLANCE

4.1 MEDICAL SURVEILLANCE PROGRAM

E & E field personnel shall actively participate in E & E's medical surveillance program as described in the CHSP and shall have received, within the past year, an appropriate physical examination and health rating.

E & E''s health and safety record (HSR) form will be maintained on site by each E & E employee for the duration of his or her work. E & E employees should inform the site safety officer (SSO) of any allergies, medical conditions, or similar situations that are relevant to the safe conduct of the work to which this SHASP applies.

4.2 RADIATION EXPOSURE

4.2.1 External Dosimetry

Thermoluminescent Dosimeter (TLD) Badges: TLD badges are required to be worn by all E & E field personnel on all E & E sites.

Pocket Dosimeters: NA

Other: _____

4.2.2 Internal Dosimetry

~ Whole body count ~ Bioassay ~ Other

Requirements: _____

4.2.3 Radiation Dose

Dose Limits: E & E's radiation dose limits are stated in the CHSP. Implementation of these dose limits may be designated on a site-specific basis.

Site-Specific Dose Limits: _____

ALARA Policy: Radiation doses to E & E personnel shall be maintained as low as reasonably achievable (ALARA), taking into account the work objective, state of technology available, economics of improvements in dose reduction with respect to overall health and safety, and other societal and socioeconomic considerations.

5. SITE CONTROL

5.1 SITE LAYOUT AND WORK ZONES

Site Work Zones: All of the sampling/scenario locations are currently used as public schools, public parks, or other public open space. Activity-based sampling work zones will be established for each scenario, and unauthorized persons will be prohibited during the scenarios. The scenario locations are shown on the attached aerial photograph/map. The exclusion zones that will be established for each scenario will be in effect only while activity-based sampling is conducted in that area; otherwise the area will not be considered an exclusion zone. A START Command Center will be established upwind or crosswind of activity-based sampling work zones. A meteorological station will be used to evaluate wind and weather conditions prior to conducting scenarios to site the Command Center in the most appropriate location.

Site Access Requirements and Special Considerations: Officials of the following entities have been informed of planned START activities:

El Dorado Hills Community Park: Wayne Lowery (916) 933-6624, Sandi Kukkola (916) 614-3213

Silva Valley Elementary School: Ralph Friend, Ray Boike (916) 985-2183 ext. 237

Rolling Hills Middle School: Ralph Friend, Ray Boike (916) 985-2183 ext. 237

Jackson Elementary School: Suzanne King, Doug Wolcott (530) 672-4300

Illumination Requirements: Not applicable; work will take place outdoors in daylight hours.

Sanitary Facilities (e.g., toilet, shower, potable water): Toilets (some portable) are available at the Community Park and at all three schools. On weekend days the Community Center office will be closed, so only portable toilets are available at the Community Park. Bottled potable water will be purchased to use for hand washing if restroom facilities are not open. Arrangements will be made with school officials to ensure that restrooms are open for scenarios and sampling at the schools.

On-Site Communications: Verbal, air horn, radio, or by cell phone. Sampling team members who are participating in scenarios along the New York Creek Nature Trail will be in sight of other team members or will be in communication via radio. Reference sampling team members will be in communication with the project manager via cell phone.

Other Site-Control Requirements: To be determined by EPA and officials from the Community Park and schools.

5.2 SAFE WORK PRACTICES

Daily Safety Meeting: A daily safety meeting will be conducted for all E & E personnel and documented on the Daily Safety Meeting Record form or in the field logbook. The information and data obtained from daily monitoring will be addressed in the safety meetings and also used to update this SHASP, as necessary.

Work Limitations: Work shall be limited to a maximum of 12 hours per day. If 12 consecutive days are worked on the project, at least one day off shall be provided before work is resumed. Work will be conducted in daylight hours unless prior approval is obtained and the illumination requirements in 29 CFR 1910.120(m) are satisfied.

Weather Limitations: Work shall not be conducted during electrical storms or during rain. The work, which involves activity-based sampling, may be strenuous; extremely hot weather will exacerbate the effects of any physical exertion that START team members may undertake.

Other Work Limitations: During some of the scenarios, sampling team members will perform activities such as jogging, playing baseball, soccer, and basketball, field maintenance that are physically demanding.

Buddy System: Field work will be conducted in pairs of team members according to the buddy system.

Line of Sight: Sampling team members participating in activity-based scenarios will remain in the line of sight and within verbal communication of at least one other team member, or they will be in communication via radio or cell phone. Sampling team members monitoring in reference locations may be working independently, but they will be in communication with the project manager via cell phone.

Eating, Drinking, and Smoking: Eating, drinking, smoking, and the use of tobacco products shall be prohibited in the exclusion and contamination reduction areas, at a minimum, and shall only be permitted in designated areas.

Contamination Avoidance: Field personnel shall avoid unnecessary contamination of personnel, equipment, and materials to the extent practicable.

Sample Handling: Protective gloves of a type designated in Section 7 will be worn when containerized soil samples are handled for labeling, packaging, transportation, and other purposes.

Vermiculite Handling: No vermiculite will be used to package samples into shipping containers (some vermiculite contains low concentrations of asbestos).

Other Safe Work Practices:

6. HAZARD EVALUATION AND CONTROL

6.1 PHYSICAL HAZARD EVALUATION AND CONTROL

Potential physical hazards and their applicable control measures are described in the following table for each task.

Hazard	Task Number	Hazard Control Measures
Biological (flora, fauna, etc.)	1, 2, 3, 4	• Potential hazard: Poison oak; snakes • Establish site-specific procedures for working around identified hazards. • Other: _____
Cold Stress		• Provide warm break area and adequate breaks. • Provide warm noncaffeinated beverages. • Promote cold stress awareness. • See *Cold Stress Prevention and Treatment* (attached at the end of this plan if cold stress is a potential hazard).
Compressed Gas Cylinders		• Use caution when moving or storing cylinders. • A cylinder is a projectile hazard if it is damaged or its neck is broken. • Store cylinders upright and secure them by chains or other means. • Other: _____
Confined Space		• Ensure compliance with 29 CFR 1910.146. • See SOP for Confined Space Entry. Additional documentation is required. • Other: _____
Drilling		• See SOP for Health and Safety on Drilling Rig Operations. Additional documentation may be required. • Other: _____ • Other: _____
Drums and Containers		• Ensure compliance with 29 CFR 1910.120(j). • Consider unlabeled drums or containers to contain hazardous substances and handle accordingly until the contents are identified. • Inspect drums or containers and assure integrity prior to handling. • Move drums or containers only as necessary; use caution and warn nearby personnel of potential hazards. • Open, sample, and/or move drums or containers in accordance with established procedures; use approved drum/container-handling equipment. • Other: _____
Electrical	1, 2, 3, 4	• Ensure compliance with 29 CFR 1910 Subparts J and S. • Locate and mark energized lines. • De-energize lines as necessary. • Ground all electrical circuits. • Guard or isolate temporary wiring to prevent accidental contact. • Evaluate potential areas of high moisture or standing water and define special electrical needs. • Other: _____

Hazard	Task Number	Hazard Control Measures
Excavation and Trenching		• Ensure that excavations comply with and personnel are informed of the requirements of 29 CFR 1926 Subpart P. • Ensure that any required sloping or shoring systems are approved as per 29 CFR 1926 Subpart P. • Identify special personal protective equipment (PPE) (see Section 7) and monitoring (see Section 8) needs if personnel are required to enter approved excavated areas or trenches. • Maintain line of sight between equipment operators and personnel in excavations/trenches. Such personnel are prohibited from working in close proximity to operating machinery. • Suspend or shut down operations at signs of cave in, excessive water, defective shoring, changing weather, or unacceptable monitoring results. • Other: _____ • Other: _____
Fire and Explosion		• Inform personnel of the location(s) of potential fire/explosion hazards. • Establish site-specific procedures for working around flammables. • Ensure that appropriate fire suppression equipment and systems are available and in good working order. • Define requirements for intrinsically safe equipment. • Identify special monitoring needs (see Section 8). • Remove ignition sources from flammable atmospheres. • Coordinate with local fire-fighting groups regarding potential fire/explosion situations. • Establish contingency plans and review daily with team members. • Other: _____
Heat Stress	1, 2, 3, 4	• Provide cool break area and adequate breaks. • Provide cool noncaffeinated beverages. • Promote heat stress awareness. • Use active cooling devices (e.g., cooling vests) where specified. • See *Heat Stress Prevention and Treatment* (attached at the end of this plan if heat stress is a potential hazard).
Heavy Equipment Operation		• Define equipment routes, traffic patterns, and site-specific safety measures. • Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. • Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols. • Identify special PPE (Section 7) and monitoring (Section 8) needs. • Ensure that field personnel do not work in close proximity to operating equipment. • Ensure that lifting capacities, load limits, etc., are not exceeded. • Other:

Hazard	Task Number	Hazard Control Measures
Heights (Scaffolding, Ladders, etc.)		• Ensure compliance with applicable subparts of 29 CFR 1910. • Identify special PPE needs (e.g., lanyards, safety nets, etc.) • Other: _____
Noise	1, 2, 3, 4	• Establish noise level standards for on-site equipment/operations. • Inform personnel of hearing protection requirements (Section 7). • Define site-specific requirements for noise monitoring (Section 8). • Other: _____
Overhead Obstructions		• Wear hard hat. • Other: _____
Power Tools	1	• Ensure compliance with 29 CFR 1910 Subpart P. • Other: _____
Sunburn	1, 2, 3, 4	• Apply sunscreen. • Wear hats/caps and long sleeves. • Other: _____
Utility Lines		• Identify/locate existing utilities prior to work. • Ensure that overhead, underground, and nearby utility lines are at least 25 feet away from project activities. • Contact utilities to confirm locations, as necessary. • Other: _____
Weather Extremes		• Potential hazards: _____ • Establish site-specific contingencies for severe weather situations. • Provide for frequent weather broadcasts. • Weatherize safety gear, as necessary (e.g., ensure eye wash units cannot freeze, etc.). • Identify special PPE (Section 7) needs. • Discontinue work during severe weather

6.2 CHEMICAL HAZARD EVALUATION AND CONTROL

6.2.1 Chemical Hazard Evaluation

Potential chemical hazards are described by task number in Table 6-1. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Table 6-1

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ioniz. Poten. (eV)
1,2	asbestos*	0.1 f/cc	0.1 f/cc		N	Inhalation, ingestion	None	Not applicable (NA)	NA	NA

Note: Use an asterisk (*) to indicate known or suspected carcinogens.Table 6-1

6.2.2 Chemical Hazard Control

An appropriate combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below published exposure levels (see Section 6.2.1).

Applicable Engineering/Administrative Control Measures: A separate exclusion zone will be applicable for each activity-based sampling scenario. The exclusion zone will be considered to be the area where the aggressive, activity-based sampling is occurring as well as areas immediately surrounding and downwind of it. These areas will be marked using caution tape.

For soil sampling, to minimize exposure to dust, the areas to be sampled will be thoroughly wetted using a spray bottle of water before samples are collected.

PPE: See Section 7.

6.3 RADIOLOGICAL HAZARD EVALUATION AND CONTROL

6.3.1 Radiological Hazard Evaluation

Potential radiological hazards are described below by task number. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Task Number	Radionuclide	DAC (µCi/ml)	Route(s) of Exposure	Major Radiation(s)	Energy(s) (MeV)	Half-Life

6.3.2 Radiological Hazard Control

Engineering/administrative controls and work practices shall be instituted to reduce and maintain employee exposures to a level at or below the permissible exposure/dose limits (see sections 4.2.3 and 6.3.1). Whenever engineering/administrative controls and work practices are not feasible or effective, any reasonable combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below permissible exposure/dose limits.

Applicable Engineering/Administrative Control Measures:

PPE: See Section 7.

7. LEVEL OF PROTECTION AND PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

The following levels of protection (LOPs) have been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and the performance specifications of the PPE. On-site monitoring results and other information obtained from on-site activities will be used to modify these LOPs and the PPE, as necessary, to ensure sufficient personnel protection. The authorized LOP and PPE shall only be changed with the approval of the regional safety coordinator or designee. Level A is not included below because Level A activities, which are performed infrequently, will require special planning and addenda to this SHASP.

Task Number	B	C	D	Modifications Allowed
1		X		no hard hat needed
2		(X)	X	no hard hat needed
3		(X)	X	no hard hat needed
4			X	no hard hat needed

Note: Use "X" for initial levels of protection. Use "(X)" to indicate levels of protection that may be used as site conditions warrant.

7.2 PERSONAL PROTECTIVE EQUIPMENT

The PPE selected for each task is indicated below. E & E's PPE program complies with 29 CFR 1910.120 and 29 CFR 1910 Subpart I and is described in detail in the CHSP. Refer to 29 CFR 1910 for the minimum PPE required for each LOP.

PPE	Task Number/LOP					
	1	2	3	4	5	6
Full-face APR or PAPR	X	(X)	(X)			
Cartridges:						
H						
GMC-H						
GMA-H						
Other: P-100	X	(X)	(X)			
Positive-pressure, full-face SCBA						
Spare air tanks (Grade D air)						
Positive-pressure, full-face, supplied-air system						
Cascade system (Grade D air)						
Manifold system						
5-Minute escape mask						
Safety glasses				X		
Monogoggles						
Coveralls/clothing (Kleenguard® or other breathable coveralls)	X	(X)	(X)	X		

PPE	Task Number/LOP					
	1	2	3	4	5	6
Protective clothing:						
Tyvek						
Saranex						
Splash apron						
Inner gloves:						
Cotton						
Nitrile				X		
Latex						
Other:						
Outer gloves:						
Viton						
Rubber						
Neoprene						
Nitrile						
Work gloves						
Safety boots (as per ANSI Z41)	(X)*	X	X	X		
Neoprene safety boots (as per ANSI Z41)						
Boot covers (type: _____)	(x)	(x)				
Hearing protection (type: _____)						
Hard hat (if heavy equipment is being operated on site)						
Face shield						
Other:						
* During some of the scenarios, sampling team members will wear sport shoes with/without cleats.						

8. HEALTH AND SAFETY MONITORING

Health and safety monitoring will be conducted to ensure proper selection of engineering/administrative controls, work practices, and/or PPE so that employees are not exposed to hazardous substances at levels that exceed permissible exposure/dose limits or published exposure levels. Health and safety monitoring will be conducted using the instruments, frequency, and action levels described in Table 8-1. Health and safety monitoring instruments shall have been appropriately calibrated and/or performance-checked prior to use.

Unless stated otherwise, airborne contaminant concentrations are measured as a time-weighted average in the worker's breathing zone. Acceptable concentrations for known airborne contaminants will be determined based on OSHA/NIOSH/ACGIH and/or NRC exposure limits.

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels	
~ PID (e.g., HNu IS-101) ~ FID (e.g., OVA 128-GC)					**Unknown Vapors** Background to 1 ppm: Level D 1 to 5 ppm above background: Level C 5 to 500 ppm above background: Level B >500 ppm above background: Level A	**Contaminant-Specific**
Oxygen Meter/Explosimeter					**Oxygen** <19.5% or >25.0%: Evacuate area; eliminate ignition sources; reassess conditions. 19.5 to 25.0%: Continue work in accordance with action levels for other instruments.	**Explosivity** ≤10% LEL: Continue work in accordance with action levels for other instruments; monitor continuously for combustible atmospheres. >10% LEL: Evacuate area; eliminate ignition sources; reassess conditions.
Radiation Alert Monitor (Rad-mini or RAM-4)					<0.1 mR/hr: Continue work in accordance with action levels for other instruments. ≥0.1 mR/hr: Evacuate area; reassess work plan and contact radiation safety specialist.	
Personal DataRam Particulate Monitor					**General/Unknown**	**Contaminant-Specific**
HCN/H_2S (Monitox)					≥4 ppm: Leave area and consult with SSO.	
Draeger Colorimetric Tubes					**Tube** **Action Level** **Action**	
Air Monitor/Sampler Type:_____ Sampling medium: _____					**Action Level** **Action**	

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels
Personal Sampling Pump Type:_Bios, SKC or Gillian Sampling medium: Cassette for asbestos					**Action Level** **Action**
Micro R Meter					<2 mR/hr: Continue work in accordance with action levels for other instruments. 2 to 5 mR/hr: In conjunction with a radiation safety specialist, continue work and perform stay-time calculations to ensure compliance with dose limits and ALARA policy. >5 mR/hr: Evacuate area to reassess work plan and evaluate options to maintain personnel exposures ALARA and within dose limits.
Ion Chamber					See micro R meter action levels above.
Radiation Survey Ratemeter/Scaler with External Detector(s)					**Detector** **Action Level** **Action**
Noise Dosimeter (Sound Level Meter)					≤85 decibels as measured using the A-weighed network (dBa): Use hearing protection if exposure will be sustained throughout work shift. >85 dBA: Use hearing protection. >120 dBA: Leave area and consult with safety personnel.
Other:					
Other:					

9. DECONTAMINATION PROCEDURES

All equipment, materials, and personnel will be evaluated for contamination upon leaving the exclusion area. Equipment and materials will be decontaminated and/or disposed and personnel will be decontaminated, as necessary. Decontamination will be performed in the contamination reduction area or any designated area such that the exposure of uncontaminated employees, equipment, and materials will be minimized. Specific procedures are described below.

Equipment/Material Decontamination Procedures (specified by work plan): Dedicated equipment will be disposed of. Non-dedicated equipment used for air sampling such as monitors and sampling pumps will be wiped between scenarios using asbestos free decontamination wipes. Other equipment, such as props for activity-based sampling (e.g., sports equipment, brooms, garden tools) will be rinsed with water. Non-dedicated equipment used for soil sampling will be either rinsed with water or wiped with asbestos-free decontamination wipes. Trowels or spoons used for soil sampling may be either disposed of or rinsed with water before re-use.

Ventilation: NA

Personnel Decontamination Procedures: Clothing will be kept clean by wearing coveralls, which will be changed and disposed of after every scenario. Shoes will be cleaned between scenarios by wiping down with moist wipes or paper towels, then vacuuming with vacuum equipped with a HEPA filter. If shoes are very muddy, they can be rinsed more thoroughly with water. In no event will personal protective equipment or clothing be cleaned by shaking or blowing. APR or PAPR masks will be cleaned by wiping with mask sanitation wipes.

PPE Requirements for Personnel Performing Decontamination: Level D.

Personnel Decontamination in General: Following appropriate decontamination procedures, all field personnel will wash their hands and face with soap and potable water. Personnel should shower at the end of each work shift.

Disposition of Disposable PPE: Disposable PPE must be rendered unusable and disposed of as indicated in the work plan.

Disposition of Decontamination Wastes (e.g., dry wastes, decontamination fluids, etc.): Paper towels and wipes used to decontaminate equipment and personnel will be bagged and taken to a local disposal facility at the end of the project. Rinse water, if any, will be discharged directly to the ground.

10. EMERGENCY RESPONSE

This section contains additional information pertaining to on-site emergency response and does not duplicate pertinent emergency response information contained in earlier sections of this plan (e.g., site layout, monitoring equipment, etc.). Emergency response procedures will be rehearsed regularly, as applicable, during project activities.

10.1 EMERGENCY RESPONSIBILITIES

All Personnel: All personnel shall be alert to the possibility of an on-site emergency; report potential or actual emergency situations to the project manager and SSO; and notify appropriate emergency resources, as necessary.

Team Leader: The project manager will determine the emergency actions to be performed by E & E personnel and will direct these actions. The project manager also will ensure that applicable incidents are reported to appropriate E & E and client project personnel and government agencies.

SSO: The SSO will recommend health/safety and protective measures appropriate to the emergency.

Other:

10.2 LOCAL AND SITE RESOURCES (including phone numbers)

Ambulance: 911

Hospital: **Mercy Hospital of Folsom**

Main Phone: 916-983-7400 1650 Creekside Dr., Folsom, CA 95630

Directions to Hospital from the following locations (map attached at the end of this plan):

Community Park: From front parking lot, turn right onto Harvard Way, and turn left onto El Dorado Hills Boulevard. Take El Dorado Hills Boulevard to Highway 50 West; exit Highway 50 at Exit 27 East Bidwell Street toward Scott Road. Turn right onto East Bidwell Street; turn right on Oak Avenue Parkway; turn left onto Creekside Drive.

Silva Valley Elementary School: From front parking lot, turn left onto Eagle Lane, then right onto Silva Valley Parkway. Turn right on Serrano Parkway to El Dorado Hills Boulevard. Turn left on El Dorado Hills Boulevard to Highway 50. Take Highway 50 West, and exit at Exit 27 East Bidwell Street toward Scott Road. Turn right onto East Bidwell Street; turn right on Oak Avenue Parkway; turn left onto Creekside Drive.

Rolling Hills Middle School: From front parking lot, exit straight out onto Harvard Way. Turn left onto El Dorado Hills Boulevard. Take El Dorado Hills Boulevard to Highway 50 West; exit Highway 50 at Exit 27 East Bidwell Street toward Scott Road. Turn right onto East Bidwell Street; turn right on Oak Avenue Parkway; turn left onto Creekside Drive.

Jackson Elementary School: From front parking lot, turn right onto Francisco Drive toward Embarcadero Drive. Turn left onto Green Valley Road. Green Valley Road becomes Blue Ravine Road. Turn left onto Oak Avenue Parkway. Turn right onto Creekside Drive.

Poison Control: 911

Police Department: 911

Fire Department: 911

Client Contact: Jerelean Johnson office 415-972-3094

Site Contacts:

El Dorado Hills Community Park: Wayne Lowery (916) 933-6624, Sandi Kukkola (916) 614-3213, Kent Oakley, 916-933-6624 ext. 204

Silva Valley Elementary School: Ray Boike (916) 985-2183 ext. 237

Rolling Hills Middle School: Ray Boike (916) 985-2183 ext. 237

Jackson Elementary School: Doug Wolcott (530) 672-4300

On-Site Telephone Number: None.

Cellular Telephone Number: (415) 317-1752

Radios Available: There will be four to eight radios used for site communications.

Other:

10.3 E & E EMERGENCY CONTACTS

E & E Emergency Response Center (24 Hours):	716/684-8060
Corporate Health and Safety Director, Dr. Paul Jonmaire:	716/684-8060 (office) 716/655-1260 (home)
Corporate Safety Officer, Tom Seiner	716/684-8060 (office) 716/662-4740 (home)
Regional Office Contact: Cynthia McLeod	415/981-2811 (office) 510/654-6250 (home)
Other: Thompson Chambers	415/981-2811 (office) 415/337-0242 (home)

10.5 OTHER EMERGENCY RESPONSE PROCEDURES

On-Site Evacuation Signal/Alarm (must be audible and perceptible above ambient noise and light levels): Car horns or air horns will be employed to notify personnel of an emergency.

On-Site Assembly Area:

El Dorado Hills Community Park: Entrance area near community center building.

Silva Valley Elementary School: Front parking lot.

Rolling Hills Middle School: Front parking lot near drop-off circle.

Jackson Elementary School: Parking lot on Franciscan Drive, near flag pole.

Emergency Egress Route to Get Off Site: Several egress routes exist - in general, personnel should exit toward main roads.

Off-Site Assembly Area: Across the street from On-site Assembly areas.

Preferred Means of Reporting Emergencies: Verbally to Site Safety Officer and/or Project Manager.

Site Security and Control: US EPA will be responsible for site security and control.

Emergency Decontamination Procedures: Dirt/mud will be removed from shoes and clothing either by rinsing with water or with a vacuum that has a HEPA filter.

PPE: Personnel will don appropriate PPE when responding to an emergency situation. The SSO and Section 7 of this plan will provide guidance regarding appropriate PPE.

Emergency Equipment: Appropriate emergency equipment is listed in Attachment 1. Adequate supplies of this equipment shall be maintained in the support area or other approved work location.

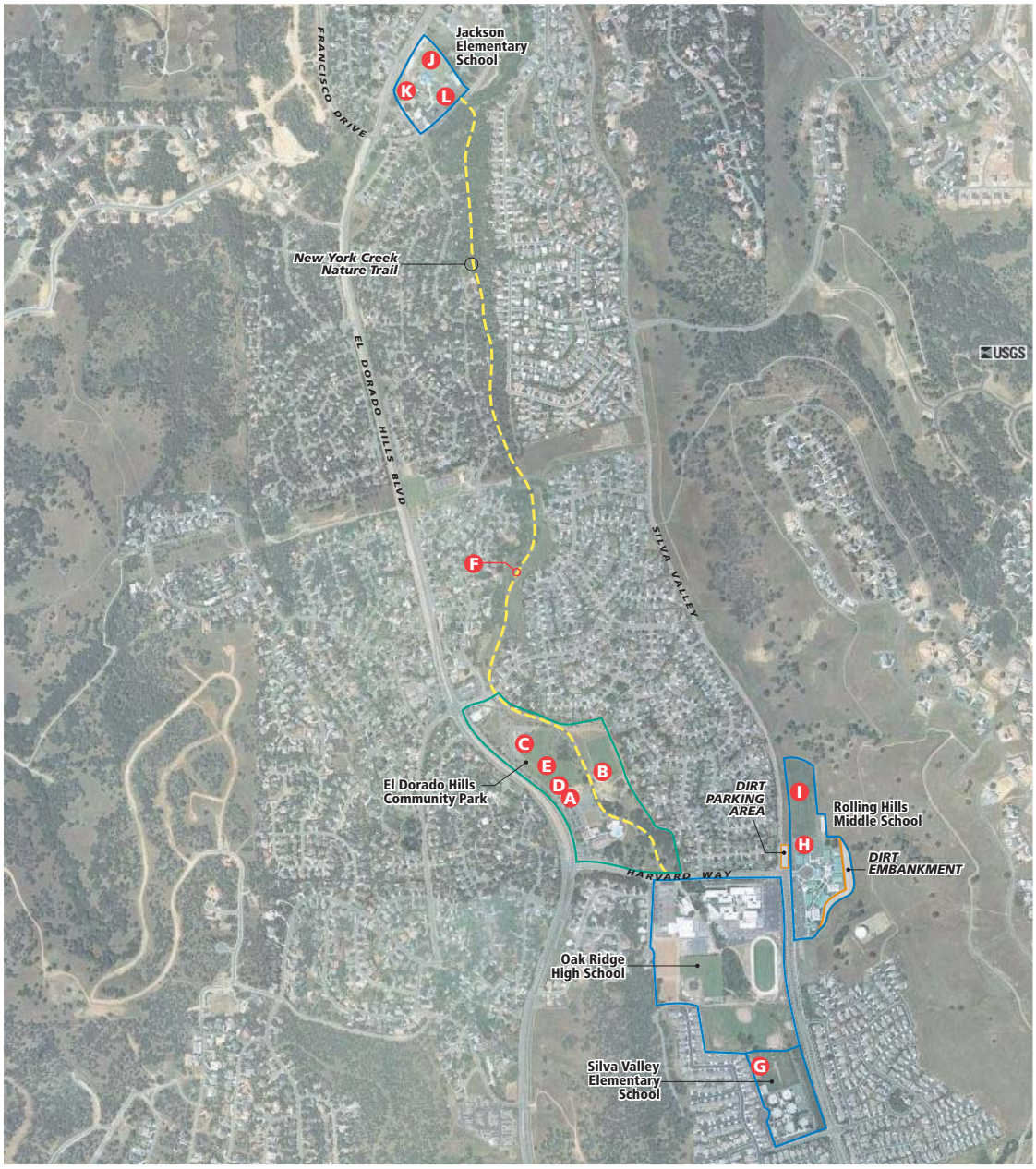
Incident Reporting Procedures: After notification of Site Safety Officer on-site, the E&E Regional Safety Coordinator will be notified. An Incident/Injury Report will be completed withing 24 hours of the incident.

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

INSTRUMENTATION	No.	EMERGENCY EQUIPMENT	No.
OVA		First aid kit	3
Thermal desorber		Stretcher	
O_2/explosimeter w/cal. kit		Portable eye wash	
Photovac tip		Blood pressure monitor	
HNu (probe: _____eV)		Fire blanket	
Magnetometer		Fire extinguisher	
Pipe locator		Thermometer (medical)	
Weather station	2	Spill kit	
Draeger tube kit (tubes: _____)			
Real-time cyanide monitor			
Real-time H_2S monitor			
Heat stress monitor		**DECONTAMINATION EQUIPMENT**	
Personal sampling pumps and supplies	X	Wash tubs	
MIE PDR dust monitor	X	Buckets	X
Mercury monitor		Scrub brushes	X
Spare batteries (type: various)	X	Pressurized sprayer	X
Noise equipment		Spray bottle	X
Brunton compass		Detergent (type: _____)	
RADIATION EQUIPMENT/SUPPLIES		Solvent (type: _____)	
Documentation forms		Plastic sheeting	X
Portable ratemeter		Tarps and poles	
Scaler/ratemeter		Trash bags	X
1" NaI gamma probe		Trash cans	X
2" NaI gamma probe		Masking tape	
ZnS alpha probe		Duct tape	X
GM pancake probe		Paper towels	X
Tungsten-shielded GM probe		Face mask	
Micro R meter		Face mask sanitizer	X
Ion chamber		Step ladders	
Alert monitor		Distilled water	
Pocket dosimeter		Deionized water	
Dosimeter charger			
Radiation warning tape			
Radiation decon supplies			
Spare batteries (type: _____)			
SAMPLING EQUIPMENT		**MISCELLANEOUS (Cont.)**	
8-oz. bottles		Gatorade or equivalent	X
Half-gallon bottles		Tables	X
VOA bottles		Chairs	X
String		Weather radio	
Hand bailers		Two-way radios	X

ATTACHMENT 1 EQUIPMENT/SUPPLIES CHECKLIST			
Thieving rods with bulbs		Binoculars	
Spoons/scoops	X	Megaphone	(X)
Knives		Cooling vest	
Filter paper		Canopy	X
Bottle labels		Video camera	X
4-ounce jars		Digital camera	X
Air sample filters	X	Palm PDA with Scribe software	X
MISCELLANEOUS		**SHIPPING EQUIPMENT**	
		Coolers	X
		Paint cans with lids, 7 clips each	
Pump		Bubble wrap	X
Surveyor's tape	X	Shipping labels	X
100' Fiberglass tape		DOT labels:	
300' Nylon rope		"Up"	X
Nylon string		"Danger"	
Surveying flags	X	"Inside Container Complies ..."	
Camera	X	Hazard Group	
Film/Video tapes	X	Strapping tape	X
Bung wrench		Baggies	X
Soil auger	X	Custody seals	X
Pick		Chain-of-custody forms	X
Shovel	X	Federal Express forms	X
Catalytic heater		Clear packing tape	X
Propane gas		Permanent markers	X
Banner tape/Caution tape	X		
Surveying meter stick			
Chaining pins and ring			
Logbooks (__4___ large, __2___ small)	X		
Required MSDSs			
Intrinsically safe flashlight			
Potable water	X		

Aerial base photo source: ***Folsom, CA Area,*** Microsoft TerraServer USA (USGS), May 9, 2002 (http://terraserver.homeadvisor.msn.com/)



- **A** Children's playground at the Community Park
- **B** New York Creek baseball playing field at the Community Park
- **C** North baseball playing field at the Community Park
- **D** South baseball playing field at the Community Park
- **E** Lower soccer field (between the north and south baseball playing fields) at the Community Park
- **F** New York Creek Nature Trail
- **G** Baseball playing field at Silva Valley Elementary School
- **H** Basketball court area at Rolling Hills Middle School
- **I** Soccer field at Rolling Hills Middle School
- **J** Playing field at Jackson Elementary School
- **K** Outdoor classroom & garden at Jackson E.S.
- **L** Play areas at at Jackson Elementary School

N

0 1/2 1 mile

0 5000 feet

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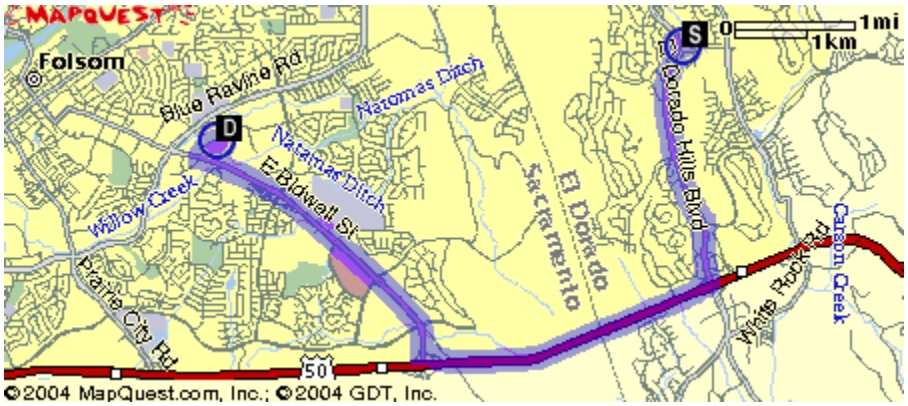
Figure 2-1

Scenario Location Map



Use Subject to License / Copyright

Origin
1021 HARVARD WAY
EL DORADO HILLS, CA 95762

Destination
1650 CREEKSIDE DR
FOLSOM, CA 95630

Door to Door Directions

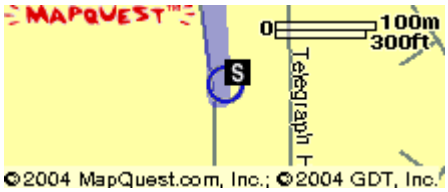
From:	1021 HARVARD WAY EL DORADO HILLS CA 95762
To:	1650 CREEKSIDE DR FOLSOM CA 95630

Direction	**Distance**
1: Start out going West on HARVARD WAY towards EL DORADO HILLS BLVD by turning right.	0.1 miles (0.1 km)
2: Turn LEFT onto EL DORADO HILLS BLVD.	2.0 miles (3.3 km)
3: Take the US-50 W ramp.	0.3 miles (0.4 km)
4: Merge onto US-50 W.	2.0 miles (3.1 km)
5: Take the E BIDWELL ST exit, exit number 27, towards SCOTT RD.	0.3 miles (0.5 km)
6: Turn RIGHT onto E BIDWELL ST.	2.6 miles (4.1 km)
7: Turn RIGHT onto CREEKSIDE DR.	0.2 miles (0.3 km)

Total Distance:	7.4 miles (11.9 km)
Estimated Time:	17 minutes

Options

Use Subject to License / Copyright



Origin
2561 FRANCISCO DRIVE
EL DORADO HILLS, CA 95762

Destination
1650 CREEKSIDE DR
FOLSOM, CA 95630

Door to Door Directions

From:	2561 FRANCISCO DRIVE EL DORADO HILLS CA 95762
To:	1650 CREEKSIDE DR FOLSOM CA 95630

Direction	**Distance**
1: Start out going North on FRANCISCO DR towards EMBARCADERO DR by turning right.	0.2 miles (0.4 km)
2: Turn LEFT onto GREEN VALLEY RD.	2.5 miles (4.1 km)
3: GREEN VALLEY RD becomes BLUE RAVINE RD.	1.4 miles (2.3 km)
4: Turn LEFT onto OAK AVENUE PKWY.	0.3 miles (0.5 km)
5: Turn RIGHT onto CREEKSIDE DR.	0.6 miles (1.0 km)

Total Distance:	5.1 miles (8.2 km)
Estimated Time:	20 minutes

Options

Display Route As:
○ Text Only ◉ Overview Map with Text ○ Turn-by-Turn Maps with Text

Show These Locations Along The Way:

HEAT STRESS PREVENTION AND TREATMENT

Elevated temperatures are potentially hazardous, especially when work is conducted without appropriate precautions. The following sections describe heat stress prevention and the recognition and treatment of heat emergencies.

Effects of Heat

A predictable amount of heat is generated as a result of normal oxidation processes within the body. If heat is liberated rapidly, the body cools to a point at which the production of heat is accelerated, and the excess heat brings the body temperature back to normal.

Interference with the elimination of heat leads to its accumulation and to the elevation of body temperature. This condition produces a vicious cycle in which certain body processes accelerate and generate additional heat. Afterward, the body must eliminate not only the heat that is normally generated but also the additional quantities of heat.

Most body heat is brought to the surface by the bloodstream and escapes to cooler surroundings by conduction and radiation. If moving air or a breeze strikes the body, additional heat is lost by convection. When the temperature of the surrounding air becomes equal to or rises above the body temperature, all the heat must be lost by vaporization of the moisture or sweat from skin surfaces. As the air becomes more humid (contains more moisture), vaporization from the skin decreases. Weather conditions including high temperatures (90 to 100 degrees F), high humidity, and little or no breeze cause the retention of body heat. Such conditions or a succession of such days (a heat wave) increase the chances of a medical emergency due to heat.

Preventing Emergencies Due to Heat

When working in situations where the ambient temperatures and humidity are high, and especially in situations where protection levels A, B, or C are required, the site safety officer should:

- Ensure that all employees drink plenty of fluids (Gatorade or its equivalent);
- Ensure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 11:00 a.m. and 6:00 p.m. to nightfall).

When protective clothing is required, the suggested guidelines correlating ambient temperature and maximum wearing time per excursion are:

Ambient Temperature	Maximum Wearing Time per Excursion
Above 90 degrees F	15 minutes
85 to 90 degrees F	30 minutes
80 to 85 degrees F	60 minutes
70 to 80 degrees F	90 minutes
60 to 70 degrees F	120 minutes
50 to 60 degrees F	180 minutes

One method of measuring the effectiveness of an employee's rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method and is performed as follows:

- Count the pulse rate for the **last** 30 seconds of the first minute of a 3-minute period, the **last** 30 seconds of the second minute, and the **last** 30 seconds of the third minute; and
- Double each result to yield beats per minute.

If the recovery pulse rate during the last 30 seconds of the first minute is 110 beats/minute or less, and the deceleration between the first, second, and third minutes is **at least** 10 beats/minute, then the work-recovery regime is acceptable. If the employee's rate is above the rate specified, a longer rest period will be required, accompanied by an increased intake of fluids.

Heat Emergencies

Heat Cramps. Heat cramps usually affect people who work in hot environments and perspire a great deal. Loss of salt from the body causes very painful cramps in leg and abdominal muscles. Heat cramps may also result from drinking iced water or other drinks either too quickly or in too large a quantity. The symptoms of heat cramps are:

- Painful muscle cramps in legs and abdomen;
- Faintness; and
- Profuse perspiration.

To provide emergency care for heat cramps, move the patient to a cool place. Give him or her sips of liquids such as Gatorade or its equivalent. Apply manual pressure to the cramped muscle. Move the patient to a hospital if there is any indication of a more serious problem.

Heat Exhaustion. Heat exhaustion also may occur in individuals working in hot environments and may be associated with heat cramps. Heat exhaustion is caused by the pooling of blood in the vessels of the skin. The heat is transported from the interior of the body to the surface by the blood. The skin vessels become dilated and a large amount of blood is pooled in the skin. This condition, plus the blood that is pooled in the lower extremities when in an upright position, may lead to an inadequate return of blood to the heart and eventual physical collapse. The symptoms of heat exhaustion are:

- Weak pulse;

- Rapid and usually shallow breathing;
- Generalized weakness;
- Pale, clammy skin;
- Profuse perspiration;
- Dizziness/faintness; and
- Unconsciousness.

To provide emergency care for heat exhaustion, move the patient to a cool place and remove as much clothing as possible. Have the patient drink cool water, Gatorade, or its equivalent. If possible, fan the patient continually to remove heat by convection, but do not allow chilling or overcooling. Treat the patient for shock and move him or her to a medical facility if there is any indication of a more serious problem.

Heat Stroke. Heat stroke is a profound disturbance of the heat-regulating mechanism and is associated with high fever and collapse. It is a serious threat to life and carries a 20% mortality rate. Sometimes this condition results in convulsions, unconsciousness, and even death. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age (over 40) increase the chance of heat stroke. Alcoholics are extremely susceptible. The symptoms of heat stroke are:

- Sudden onset;
- Dry, hot, and flushed skin;
- Dilated pupils;
- Early loss of consciousness;
- Full and fast pulse;
- Deep breathing at first, followed by shallow or faint breathing;
- Muscle twitching, growing into convulsions; and
- Body temperature reaching 105 to 106 degrees F or higher.

When providing emergency care for heat stroke, remember that it is a life-threatening emergency. Transportation to a medical facility should not be delayed. Move the patient to a cool environment, if possible, and remove as much clothing as possible. Ensure an open airway. Reduce body temperature promptly by dousing the body with water or, preferably, by wrapping the patient in a wet sheet. If cold packs are available, place them under the arms, around the neck, at the ankles, or any place where blood vessels that lie close to the skin can be cooled. Protect the patient from injury during convulsions.